

**WHAT IS CLAIMED IS:**

1                   1.     An apparatus for screening test compounds for an effect on a  
2 biochemical system, comprising:  
3                   a substrate having at least one surface;  
4                   at least two intersecting channels fabricated into said surface  
5 of said substrate, at least one of said at least two intersecting channels having at  
6 least one cross-sectional dimension in the range from about 0.1 to about 500  $\mu\text{m}$ ;  
7                   a source of a plurality of different test compounds fluidly  
8 connected to a first of said at least two intersecting channels;  
9                   a source of at least one component of said biochemical system  
10 fluidly connected to a second of said at least two intersecting channels;  
11                  a fluid direction system for flowing said at least one  
12 component within said second of said at least two intersecting channels and for  
13 introducing said different test compounds from said first to said second of said at  
14 least two intersecting channels;  
15                  a cover mated with said surface; and  
16                  a detection zone in said second channel for detecting an effect  
17 of said test compound on said biochemical system.